James J. Stanley
Plant General Manager

Office: 315-349-5205
Fax: 315-349-1321
Email: James.Stanley@cengllc.com

CENG
a joint venture of
Constellation Energy EDF

NINE MILE POINT
NUCLEAR STATION

November 5, 2013

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Nine Mile Point Nuclear Station Unit 1
Renewed Facility Operating License No. DPR-63
Docket No. 50-220

Revision 1 to Licensee Event Report 2012-004, Automatic Reactor Scram due to a Generator Load Reject

Licensee Event Report (LER) 2012-004, Automatic Reactor Scram due to a Generator Load Reject, was submitted on December 21, 2012 in accordance with 10 CFR 50.73(a)(2)(iv)(A). Attached is Revision 1 to LER 2012-004. This supplement is submitted to update the root cause of the event and associated actions.

There are no regulatory commitments in this submittal.

Should you have questions regarding the information in this submittal, please contact Everett (Chip) Perkins, Director-Licensing, at (315) 349-5219.

Sincerely,

JJS/KJK

Attachment: Revision 1 to Licensee Event Report 2012-004, Automatic Reactor Scram due to a Generator Load Reject

cc: Regional Administrator, NRC
Project Manager, NRC
Resident Inspector, NRC

IE22
NRR

ATTACHMENT

REVISION 1 TO LICENSEE EVENT REPORT 2012-004

AUTOMATIC REACTOR SCRAM DUE TO A GENERATOR LOAD REJECT

Nine Mile Point Nuclear Station, LLC
November 5, 2013

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Nine Mile Point Unit 1	05000220	1 OF 7

4. TITLE

Automatic Reactor Scram Due to a Generator Load Reject

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	29	2012	2012	004	01	11	05	2013	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

N

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Everett (Chip) Perkins, Director - Licensing	(315) 349-5219

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	EL	XFMR	ABB	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On October 29, 2012 at 21:00:57 hours, Nine Mile Point Unit 1 (NMP1) experienced an unplanned, automatic, reactor scram due to a Turbine Trip from 100 percent power caused by activation of a generator lockout relay. The generator trip was an unexpected consequence and was initiated by a high fault current condition in the Scriba switchyard detected by both NMP1 instantaneous ground directional overcurrent relays. A polarity wiring error within the generator step up transformer neutral ground current transformers (CTs) caused the relay protection circuits to actuate on the fault in the Scriba switchyard. This was not expected because the relay protection circuits were designed to detect a fault condition between the main generator and the station output breakers. The error was caused by less than adequate oversight by CENG personnel of transformer XF-TB01 testing with respect to unclear specificity of requirements for vendor performed testing and inadequate methods of verification for ensuring vendor compliance with engineering specifications.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an actuation of the reactor protection system and an actuation of the high pressure coolant injection system while the reactor was critical.

Corrective actions include correcting the wiring of the CT circuits, verifying all the requirements in the engineering specification have been met, revising the associated electrical drawings, and revising engineering procedures to require the listing of critical attributes for equipment/components and to define testing criteria/verification methods to be performed when factory acceptance testing or modification functional testing cannot be performed to verify the functionality of equipment/components.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2012	004	01	2 OF 7

NARRATIVE

I. DESCRIPTION OF EVENT

A. PRE-EVENT PLANT CONDITIONS:

Prior to the event, Nine Mile Point Unit 1 (NMP1) was operating at 100 percent of rated thermal power with no inoperable systems affecting this event.

B. EVENT:

At approximately 21:00 on Monday October 29, 2012, high winds from the remnants of Hurricane Sandy caused a lightning arrestor mast maintained by grid operator National Grid to fall in the Scriba switchyard in close proximity to the 345 kV 'A' bus, causing a fault which actuated protective relaying and isolated the 'A' bus. The loss of Line 5, the offsite power source for Nine Mile Point Unit 2 (NMP2) Division 1 resulted in the automatic actuation of the NMP2 Division 1 emergency diesel generator. This event was sensed by NMP1, NMP2, and the Fitzpatrick stations as the Scriba switchyard is a common output for all three stations.

The protective relaying for the switchyard is designed to isolate a fault on the 'A' bus by opening the breakers on each of the four tie busses (R90, R230, R250, and R210) and the 115 kV supply breaker to Line 5. The relaying scheme operated as designed isolating the 'A' bus, while the 'B' bus remained energized following the event and NMP2 and Fitzpatrick did not trip.

Prior to the fault being isolated in the Scriba switchyard, the fault was detected by both NMP1 Line 8 and Line 9 instantaneous ground directional overcurrent relays (67N-1 and 67N-2), resulting in a generator trip signal. The logic for the instantaneous ground directional overcurrent relays is one-out-of-two, to actuate the generator trip protective circuitry. During this event, both the 67N-1 and 67N-2 relays actuated, causing the generator lockout relay, 86G-2 to actuate. This relay caused a turbine trip and reactor scram from 100 percent power at 21:00:57 hours. The actuation of the 67N-1 and 67N-2 relays was confirmed by a walk-down performed immediately following the event, which revealed both relays were flagged.

This event involved the automatic actuation of the Reactor Protection System which resulted in a reactor scram, and an actuation of the high pressure coolant injection system. The NRC notification per 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A) was completed on October 29, 2012, at 21:58 (Event Number 48453).

C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

The polarity wiring error in the generator step up transformer at the time of the scram contributed to this event. There were no other inoperable structures, systems, or components that contributed to the event.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2012	004	01	3 OF 7

NARRATIVE

D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

October 29, 2012

21:00:00 Lightning arrestor mast S12-105, in the Scriba switchyard, fell and came in close proximity to a phase of the 345 kV 'A' bus causing a short to ground.

21:00:57 Line 8 and line 9 instantaneous ground directional overcurrent relays (67N-1 and 67N-2) actuated resulting in a generator trip signal to the generator lockout relay, 86G-2. This relay caused a turbine trip and reactor scram from 100% power.

21:01:04 The High Pressure Coolant Injection (HPCI) system automatically initiated on low Reactor Pressure Vessel (RPV) water level as expected due to RPV level shrink following the scram.

21:01:51 RPV level was restored above the HPCI system low level actuation setpoint and the HPCI system initiation signal was reset.

E. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

Three Electromatic Relief Valves (ERVs) opened momentarily, as expected, due to the resulting reactor pressure transient following the scram and re-closed automatically.

F. METHOD OF DISCOVERY:

This event was discovered by the operators when turbine trip and reactor scram from 100% power was observed in the control room.

G. MAJOR OPERATOR ACTION:

The HPCI system initiation signal was reset after the RPV level was restored above 53 inches. Pressure control was established on the Turbine Bypass Valves, which is the preferred system.

H. SAFETY SYSTEM RESPONSES:

Following initiation of the automatic scram, all control rods fully inserted. The HPCI system automatically initiated on low RPV level as expected due to RPV level shrink following the scram. Three ERVs actuated, as expected, due to the resulting reactor pressure transient following the scram. No other operational conditions requiring the response of safety systems occurred as a result of this event.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2012	004	01	4 OF 7

NARRATIVE

II. CAUSE OF EVENT:

At approximately 21:00 on Monday October 29, 2012, high winds from the remnants of Hurricane Sandy caused a lightning arrestor mast maintained by grid operator National Grid to fall in the Scriba switchyard in close proximity to the 345 kV 'A' bus, causing a fault which actuated protective relaying and isolated the 'A' bus. The loss of Line 5, the offsite power source for NMP2 Division 1 resulted in the automatic actuation of the NMP2 Division 1 emergency diesel generator. This event was sensed by NMP1, NMP2, and the Fitzpatrick stations as the Scriba switchyard is a common output for all three stations.

The protective relaying for the switchyard is designed to isolate a fault on the 'A' bus by opening one of the breakers on each of the four tie busses, and the breaker to the 115 kV 'C' bus. The relaying scheme operated as designed by isolating the 'A' bus, while the 'B' bus remained energized.

Prior to the fault being isolated in the transmission switchyard, the fault was detected by both NMP1 station output instantaneous ground directional overcurrent relays (67N-1 and 67N-2), resulting in a generator trip and subsequent reactor scram. The logic for the instantaneous ground directional overcurrent relays is one-out-of-two to actuate the generator trip protective circuitry. During this event, both the 67N-1 and 67N-2 relays actuated which caused the trip signal to the generator lockout relay. This relay caused a turbine trip and reactor scram. The actuation of the 67N-1 and 67N-2 relays was confirmed by a walk-down performed immediately following the event, which revealed both relays were flagged.

The design of the 67N-1 and 67N-2 relay scheme is to detect a fault condition between the main generator and the station output breakers, and not to detect a fault on the grid. Troubleshooting discovered that the polarity of the primary side of both neutral current transformers (CT-11 and CT-12) on the main generator step-up transformer was reversed from the design drawings. Incorrect polarity of the neutral current transformers caused the current polarization portion of the relay to actuate on the fault in the switchyard. The wiring error occurred when the transformer was replaced in 2011.

Nine Mile Point Nuclear Station, LLC (NMPNS) Engineering Procurement Specification E192 identifies the requirement for the design, manufacture, inspection, test, preparation and shipment of the new ABB non-safety related generator step-up transformer (XF-TB01) for NMP1. Within this specification, the requirements for the neutral bushing current transformers are included for the XF-TB01 transformer at NMP1. The testing requirements in the procurement specification state that the vendor shall perform point-to-point continuity tests and electrical insulation tests to verify electrical integrity of the system. Documentation was provided by ABB stating that this had been completed when it had not.

While Specification E192 detailed many engineering and technical requirements for the new NMP1 transformer XF-TB01, the roles and responsibilities for ensuring that the vendor complied with these requirements were not provided. NMPNS Procedure NEP-DES-09 does not define or discuss this subject. For critical, non-safety related items such as the XF-TB01 transformer, procedure CNG-SC-1.01-3000, Enhanced Procurement for Critical Material, should have been utilized to ensure that adequate oversight and control of the vendor supplied equipment was provided. This procedure requires a Critical Spare Acceptance Plan that details specific attributes, acceptable values or ranges, verification methods, and responsible groups, as well as a documented signature and date for each identified criteria.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2012	004	01	5 OF 7

NARRATIVE

Based on the above discussion, the cause for this event was due to less than adequate oversight by CENG personnel of transformer XF-TB01 testing with respect to unclear specificity of requirements for vendor performed testing and inadequate methods of verification for ensuring vendor compliance with engineering specifications. This event was entered into the NMPNS corrective action program as condition report number CR-2012-009820.

III. ANALYSIS OF THE EVENT:

This event involved a valid actuation of the Reactor Protection System which resulted in a reactor scram, and a valid actuation of the HPCI system, and is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A).

There were no actual nuclear safety consequences associated with this event. All control rods fully inserted following the automatic reactor scram. The HPCI system automatically initiated on low RPV level, as expected, due to RPV level shrink following the scram. Three ERVs actuated, as expected, due to the resulting reactor pressure transient following the scram. There were no other automatic initiations of safety systems, and immediate actions performed by the operators were adequate and appropriate in placing and maintaining the reactor in a safe shutdown condition. The reactor scram was without complications and was not risk significant.

The closest related transient described in the NMP1 Updated Final Safety Analysis Report (UFSAR) is the Loss of Electrical Load (Generator Trip) event described in UFSAR Section XV-B.3.19. The maximum reactor pressure and peak neutron flux reached during the October 29, 2012 event were both less than the calculated values presented in the UFSAR analysis for a Loss of Electrical Load. In addition, this transient event does not challenge the Minimum Critical Power Ratio (MCPR) safety limit and, therefore, is not evaluated on a reload cycle basis.

Based on the above discussion, it is concluded that the safety significance of this event is low and the event did not pose a threat to the health and safety of the public or plant personnel.

The NRC performance indicator for Unplanned Scrams per 7,000 Critical Hours is projected to rise to approximately 2.47 and remains green. No other NRC performance indicators were impacted by this event.

IV. CORRECTIVE ACTIONS:

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

1. The wiring for the neutral current transformers (CT-11 and CT-12) was revised to obtain the correct polarity.

2. The electrical drawings for the XF-TB01 transformer were revised to reflect the correct configuration of the neutral bus bar connections.

3. The failed lightning mast has been removed from service by National Grid and will be replaced.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2012	004	01	6 OF 7

NARRATIVE

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

1. Procedure NEP-DES-09 was revised to require the listing of critical attributes for equipment/components and to define testing criteria/verification methods to be performed when factory acceptance testing or modification functional testing cannot be performed to verify the functionality of equipment/components. The revised procedure added a reference to use procedure CNG-SC-1.01-3000, Enhanced Procurement for Critical Material, for defining critical attributes, acceptance criteria, verification methods, and responsible individuals to ensure proper oversight and vendor compliance with requirements within engineering specifications.

2. The requirements in Specification E-192 for the XF-TB01 transformer were verified to have been met or technically resolved/accepted.

3. Electrical drawings and the transformer vendor manual were revised to document field wiring of the neutral current transformers and secondary circuits.

4. Procedure S-RCMP-GEN-005 was revised to include direction to either electrically test the primary circuit of the neutral current transformer or visually inspect the primary circuit wiring.

5. All remaining lightning masts in the Scriba switchyard were visually inspected by National Grid. No other defective masts were found.

6. Interior inspections of the lightning masts in the Scriba switchyard were performed with a digital inspection camera by National Grid.

7. All lightning masts in the NMP1 and NMP2 switchyards were visually inspected. No defective masts were found.

V. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

There were no failed components that contributed to this event.

B. PREVIOUS LERs ON SIMILAR EVENTS:

LER 2009-003, Manual Scram and High Pressure Coolant Injection Following a Loss of Feedwater Level Control Due to Firmware Deficiency, submitted on December 4, 2009, describes an event in which NMP1 manually scrammed from 100 percent power. The scram was caused by a loss of control of the shaft-driven feedwater pump flow control valve (FCV), which resulted in an increasing feedwater flow rate and rising reactor pressure vessel water level. The cause of the event was a programming error in the vendor-supplied firmware logic that prevented the proper operation of the transfer function of the FCV positioner when the operating positioner became mechanically bound. Instead, the FCV continued to open and raise reactor water level despite operator attempts to manually control the FCV. The actions taken following this event would not have prevented the October 29, 2012 event from occurring.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2012	004	01	7 OF 7

NARRATIVE

C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:

COMPONENT	IEEE 803 FUNCTION IDENTIFIER	IEEE 805 SYSTEM IDENTIFICATION
Reactor Protection System	N/A	JC
High Pressure Coolant Injection System	N/A	BJ
Main Generator Lockout Relay	86	EL
Main Generator Output Power System	TG	EL
Neutral Grounding Bus Bars	BU	EL
Electromatic Relief Valve	RV	JC
Directional Overcurrent Relays	67	EL
Current Transformers	XFMR	EL
Main Transformer	XFMR	EL
Tie Busses	SSBU	FK
Supply Breakers	BKR	FK
Lightning Mast	LAR	FK
Reactor Pressure Vessel	RPV	NA

D. SPECIAL COMMENTS:

None